

CLAIMS

1. Joint for the angular connection of hollow profile members intended to form door/window profile frames and the like, wherein the edges of the hollow profile members have been previously cut at an angle such as to obtain a matching contact following the assembly thereof, the joint comprising a slide base portion (1) with an upper first flat basement (1a) with a centrally located first cavity (1b) and with sides symmetrically extending on either side of said first flat basement (1a), each one of said sides of said slide base portion (1) having outer planar surfaces (1e) in sliding contact with a wall of each one of a pair of chambers (13a, 13b) of the hollow profile members being brought together for connection, a sheet metal mobile portion (2) with an upper second flat basement (2a) with a centrally located second cavity (2b) and with sides symmetrically extending on either side of said second flat basement (2a), said side surfaces of the base portion (1) and side surfaces of the sheet metal mobile portion (2) being symmetrically arranged on either side of a plane of symmetry x-x' passing through the plane of matching contact of the previously cut edges of said hollow profile members, said upwardly extending sides (2e) of said sheet metal mobile portion (2) being oriented in a direction substantially parallel to the plane of symmetry x-x', said sheet metal mobile portion (2) comprising upwardly extending sides (2e) on either side thereof terminating at sharp edges (2g), said sharp edges (2g) being adapted to produce an indentation effect into the walls of chambers (13a, 13b) and a bolt (3) being employed in a tightening process of the joint, said bolt (3) passing through a hole (11a, b) lying at said plane of symmetry x-x' and being screwed to exert an upwardly pushing force onto said sheet metal mobile portion (2) until said sharp edges (2g) thereof indent the relatively softer walls of the profile members being connected, characterized by:

each one of said sides of said slide base portion (1) comprising a first section (1c) extending into a second convergent surface (1d);

said sheet metal mobile portion (2) having a configuration similar to the configuration of said slide base portion (1), each one of said sides of said sheet metal mobile portion (2) comprising planar side surfaces (2c) and (2d),
5 each with a length generally equivalent to the length of underlying corresponding said first section (1c) and said second convergent surface (1d) of said slide base portion (1), said sheet metal mobile portion (2) being superimposed onto said slide base portion (1) so that said second flat
10 basement (2a) is oriented parallel above said underlying first flat basement (1a) in a direction perpendicular to said plane of symmetry x-x';

said slide base portion (1) further including upwardly bent legs (1e') following a configuration similar to said upwardly extending sides (2e) of said sheet metal portion (1), so as to form recessions allowing tight fitting
15 therein of said upwardly extending sides (2e) of said sheet metal portion (1) and provide handling of said joint as if it were a single item, wherein following assembly and introduction of said joint within a junction corner of the hollow profile members being connected, screwing of said bolt (3) leads to said sharp edges (2g) of said sheet metal mobile portion (2) contacting the
20 walls of said corresponding chambers (13a, 13b) of the profiles being connected, self alignment through perfect convergence of the profiles being connected along the axis of symmetry x-x' and indentation of said sharp edges (2g) of said sheet metal mobile portion (2) into the walls of said corresponding chambers (13a, 13b) of the profiles being connected after said
25 upwardly extending sides (2e) of the sheet metal mobile portion (2) have been deflected relatively to the side surfaces (2d) of the sheet metal mobile portion (2) thereby leading to resilient stresses uniformly applied on either side of the joint being stored in said sheet metal mobile portion (2), said

resilient stresses thereby maintaining the joint in a tightened condition and the profile members rigidly connected.

2. Joint for the angular connection of hollow profile members as claimed in above claim 1, characterized by that said hole (11a,b) lying at said plane of symmetry x-x' is made up by two identical halves, one half (11a) being drilled at said chamber (13a) of one of said hollow profile members and the other half (11b) being drilled at said chamber (13b) of the other of said hollow profile members being brought together for connection, said one half (11a) matching said other half (11b) along said plane of matching contact of the profiles, said two halves (11a) and (11b) forming an angle equivalent to the angle at which said hollow profile members are being connected.

3. Joint for the angular connection of hollow profile members as claimed in above claim 1, characterized by that said sharp edges (2g) of said sheet metal mobile portion producing the indentation effect may alternatively take the form of an arrangement of tooth or pointed pin protrusions or razor edge like sharp surfaces made from material harder than the material of the walls of said chambers (13a,13b) of the hollow profile members being connected, said arrangement of tooth or pointed pin protrusions or razor edge like sharp surfaces taking the form of a single acting indentation effective surface or constituted by a pair of adjacently acting indentation effective surfaces, said surfaces coming sequentially in contact with the walls of said chambers (13a,13b) of the hollow profile members being connected.

4. Joint for the angular connection of hollow profile members as claimed in above claim 3, characterized by that said sharp edges (2g) of said sheet metal mobile portion (2) producing the indentation effect alternatively taking the form of an arrangement of single or double tooth or pointed pin protrusions or razor edge like sharp surfaces made from material harder than the material of the walls of said chambers (13a,13b) of the hollow profile

members being connected are included in an independent plate item (15), said plate item (15) being introduced into a recession being formed at the terminals of said upwardly extending sides (2e) of said sheet metal portion (2).

- 5 5. Joint for the angular connection of hollow profile members as claimed in above claim 1, characterized by that said side surfaces (2c) of said sheet metal mobile portion (2) end at a bent structure of the sheet metal portion (2) thereby forming a recession (17) for the engagement of a
- 10 (16) having the form of a U section with the legs thereof bent to upwardly extending members with sharp edges (16g) producing the profile wall indentation effect and by that said slide base portion (1) being made in two identical portions, symmetrically on either side of said plane of symmetry x-x', said two identical portions being pivotally connected around a pivotal
- 15 axis (60) thereby being appropriate for the connection of hollow profiles forming varying angles at the junction thereof and said sheet metal mobile portion (2) being also adjustable to profile connections at varying angles by movement of said pivotally mounted end portion (16) thereof.

- 20 6. Joint for the angular connection of hollow profile members as claimed in above claim 1, characterized by that said bolt (3) passing through a hole (11a,b) lying at said plane of symmetry x-x' and exerting when being screwed an upwardly pushing force onto said sheet metal mobile portion (2) until said sharp edges (2g) thereof indent the relatively softer walls of the profile members being connected, passes through an internally threaded hole
- 25 at said centrally located second cavity (2b) of said sheet metal mobile portion (2) and subsequently stops by contact of a sharp edge (3b) thereof onto the coaxially underlying said first cavity (1b) of said base portion (1), wherein said upwardly pushing force exerted onto said sheet metal mobile

portion (2) is a reaction to the force being exerted onto said first cavity (1b) of said base portion (1).

7. Joint for the angular connection of hollow profile members as claimed in above claim 6, characterized by that said internally threaded hole at said centrally located second cavity (2b) of said sheet metal mobile portion (2) is being formed by either expansion of the sheet metal at said second cavity (2b) into a cylindrical collar (19) that is subsequently internally threaded or by the alternative addition, onto said second basement (2a), of either an independent plate (18) having a planar surface (18a) with dimensions such as to fit onto said second basement (2a) of the sheet metal portion (2) and a central hole (18b) that is internally threaded and coincides with a hole being opened at said centrally located second cavity (2b) on said second basement (2a) when plate (18) is brought in contact with said second basement (2a) or of an internally threaded cylindrical collar (48) with a body portion (48a) and a central hole (48b) coinciding with said hole being opened at said centrally located second cavity (2b) on said second basement (2a) of the sheet metal portion (2).

8. Joint for the angular connection of hollow profile members as claimed in above claim 1, characterized by that said bolt (3) passing through a hole (11a,b) lying at said plane of symmetry x-x' and exerting when being screwed an upwardly pushing force onto said sheet metal mobile portion (2) until said sharp edges (2g) thereof indent the relatively softer walls of the profile members being connected, passes through an internally threaded hole at said centrally located first cavity (1b) of said slide base portion (1) and subsequently stops by contact of a sharp edge (3b) thereof onto the coaxially overlying said second cavity (2b) of said sheet metal mobile portion (2), wherein said upwardly pushing force exerted onto said sheet metal mobile

portion (2) is the force being exerted onto said second cavity (2b) of said sheet metal mobile portion (2).

9. Method of angular connection of hollow profile members intended to form door/window profile frames and the like, wherein the edges of the hollow profile members have been previously cut at an angle such as to obtain a matching contact following the assembly thereof and comprise a single hole (11a,b) made of two halves (11a), (11b), one half in each of the hollow profile members being brought together for an angular connection, comprising the following steps:

a. inserting a previously assembled joint with a central bolt (3) passing through an upper sheet metal mobile portion (2) and stopping at an underlying base portion (1) thereof, through an opening (12a) of a chamber (13a) of a first one of the pair of hollow profile members to be connected, wherein half of the joint is introduced in this first one of the pair of profile members,

b. bringing a chamber (13b) of the second one of the pair of hollow profile members to be connected in a position wherein the protruding half of the joint is slidably inserted therein, thereby obtaining an accurate coincidence of the previously cut edges of the hollow profile members to be connected and further obtaining said centrally located single angular hole (11a,b) by coincidence of the two halves (11a, 11b),

c. employment of a key (14) passing through said single angular hole (11a,b) and rotation by means of the same of said bolt (3) lying coaxially along the plane of connection of the two hollow profile members that have been connected, until the sharp edges (2g) of upwardly extending sides of the sheet metal portion (2) contact the walls of said chambers (13a, 13b), and

d. further screwing of said bolt (3) to obtain self alignment through perfect convergence of the profiles being connected along the axis of

symmetry x- x' and indentation of said sharp edges (2g) of said sheet metal mobile portion (2) into the walls of said corresponding chambers (13a, 13b) of the profiles being connected whilst the upwardly extending sides (2e) of the sheet metal mobile portion (2) are deflected relatively to the side surfaces (2d) of the sheet metal mobile portion (2) thereby leading to resilient stresses uniformly applied on either side of the joint being stored in said sheet metal mobile portion (2), said resilient stresses thereby maintaining the joint in a tightened condition and the profile members rigidly connected.